Appendix A

Claim Chart Comparing Interfering Claims

Applicants' Claim 46	'196 Patent Claim 1
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising: receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array; estimating initial positions of selected marker features within an image of the molecular array; calculating refined positions of the selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array; using the initial coordinate system to locate positions of strong features within one or more images of the molecular array; refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values	1. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising: receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array; estimating initial positions of selected marker features within an image of the molecular array; calculating refined positions of the selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array; using the initial coordinate system to locate positions of strong features within one or more images of the molecular array; refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values

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Applicants' Claim 46	'196 Patent Claim 1
in regions of the one or more images of the molecular array that contain the strong features;	in regions of the one or more images of the molecular array that contain the strong features;
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.

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Applicants' Claim 59	'196 Patent Claim 14
59. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and a computer for executing the computer program.	14. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and a computer for executing the computer program.

Applicants' Claim 64	'820 Patent Claim 1
64. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising: (a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array; (b) calculating an actual result of a	1. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising: (a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array; (b) calculating an actual result of a

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Applicants' Claim 64	'820 Patent Claim 1
function on pixels of the image lying in a second pattern;	function on pixels of the image lying in a second pattern;
(c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and	(c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and
(d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the second pattern on the array and repeating steps (b) and (c), and repeating the foregoing as needed until the results of the comparison are within the predetermined difference.	(d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the second pattern on the array and repeating steps (b) and (c), and repeating the foregoing as needed until the results of the comparison are within the predetermined difference.

Applicants' Claim 66	'196 Patent Claim 1
66. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	1. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:
receiving **an image** of the molecular array, produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	receiving **a number of images** of the molecular array, **each** produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;
estimating initial positions of selected marker features within **the** image of the molecular array;	estimating initial positions of selected marker features within **an** image of the molecular array;
calculating refined positions of the	calculating refined positions of the

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Applicants' Claim 66	'196 Patent Claim 1
selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute **a grid** for locating features of the molecular array in the **image** of the molecular array; using the initial **grid** system to locate positions of strong features within **the image** of the molecular array; refining the positions of strong features within the **image** of the molecular array by analyzing data signal intensity values in regions of the **image** of the molecular array that contain the strong features; using the refined positions of strong features in the **image** of the molecular array to calculate a refined system to locate positions of weak features within the **image** of the molecular array; using the refined positions of strong features in the **image** of the molecular array to calculate a refined **grid** system to locate positions of local background regions surrounding all strong and weak features within the **image** of the molecular array; and	selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute **an initial coordinate system** for locating features of the molecular array in the **number of images** of the molecular array; using the initial **coordinate** system to locate positions of strong features within **one or more images** of the molecular array; refining the positions of strong features within the **one or more images** of the molecular array by analyzing data signal intensity values in regions of the **one or more images** of the molecular array that contain the strong features; using the refined positions of strong features in the **one or more images** of the molecular array to calculate a refined **coordinate** system to locate positions of weak features within the **number of images** of the molecular array; using the refined positions of strong features in the **one or more images** of the molecular array to calculate a refined **coordinate** system to locate positions of local background regions surrounding all strong and weak features within the **number of images** of the molecular array; and

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Applicants' Claim 66	'196 Patent Claim 1
extracting data from strong features, and their respective local background regions, within the **image** of the molecular array using the refined positions of strong features within the **image** of the molecular array and extracting data from weak features, and their respective local background regions, within the **image** of the molecular array using locations for the weak features calculated from the refined **grid** system.	extracting data from strong features, and their respective local background regions, within the **number of images** of the molecular array using the refined positions of strong features within the **number of images** of the molecular array and extracting data from weak features, and their respective local background regions, within the **number of images** of the molecular array using locations for the weak features calculated from the refined **coordinate** system.

Applicants' Claim 67	'196 Patent Claim 14
67. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces **an image** of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the **image** of the molecular array produced by the scanning component to **identify the location of** features in the **image** of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the **located** features within **an image** of	14. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces **images** of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the **images** of the molecular array produced by the scanning component to **index** features in the **images** of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the **indexed** features within **images** of the molecular array;

Applicants' Claim 67	'196 Patent Claim 14
the molecular array; and a computer for executing the computer program.	and a computer for executing the computer program.

Applicants' Claim 68	'820 Patent Claim 1

68. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:
 	
    (a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;
 	
    (b) calculating an actual result of a function on pixels of the image lying in a pattern; and
 	
    (c) altering the orientation of the pattern on the array and repeating steps **(a)** and **(b)** as needed until the results of the comparison are within the predetermined difference.
	1. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:
	
	    (a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;
	
	    (b) calculating an actual result of a function on pixels of the image lying in a **second** pattern;
	
	    (c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and
	
	    (d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the **second** pattern on the array and repeating steps **(b)** and **(c), and repeating the foregoing** as needed until the results of the comparison are within the predetermined difference.

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